Forest Insect & Disease Management

AERIAL SURVEY OF SPRUCE BUDWORM DAMAGE

ON THE NICOLET NATIONAL FOREST, WISCONSIN 1981

by

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INTRODUCTION

Spruce budworm Choristoneura fumiferana (Clemens), has continued to be a pest problem on the Forest since Erickson reported 600 acres of defoliation in 1973. Since that time the budworm population has continued to increase throughout the Forest (Fowler 1974, Anderson 1975, Munson & Robbins 1979). In 1980 more than 105,000 acres were defoliated by the budworm.[1]/ Forest Pest Management personnel aerially surveyed the Forest in 1981 to record further defoliation and damage from this forest pest. Areas of jack pine defoliation and mortality and hardwood discoloration and/or mortality were also recorded during this survey.

OBJECTIVE

To determine the location, acreage, and severity of spruce budworm defoliation and other aerially detectable insect and/or disease damage on the Nicolet National Forest in 1981.

METHOD

The aerial survey was conducted on July 7 and 8, 1981, on the Nicolet National Forest. A Cessna 182 was used as the survey aircraft and flown at an altitude of 1000 to 1500 feet above ground at an airspeed of 100 miles per hour. The aircraft flew on preplanned flight lines (east - west) that were 3 miles apart. Aerial observations were made between the hours of 0830 and 1530. The flight crew consisted of a pilot, navigator, and two observers. The navigator was Dick Cutler (I & D Forester) from the supervisor's office of the Nicolet National Forest. Current areas of defoliation and recent mortality were sketched on U.S. Forest Service half-inch-to-the-mile maps; the sketched areas were later measured for acreage estimates with a dot grid. The following codes were used to designate severity of defoliation by spruce budworm.

DEFOLIATION

L - Light, 0-50 percent of crown showing reddish-brown discoloration.

M - Moderate, 51-100 percent of crown showing reddish-brown discoloration.

H - Heavy, 51-100 percent of crown showing reddish-brown and grey discoloration.

[1]/ Personal correspondence on file St. Paul Field Office.

RESULTS

Only 9,216 acres of spruce budworm defoliation were mapped during the 1981 aerial survey. Of the 9,216 acres of defoliation, 8,960 were classed as light defoliation (Table 1). Most of the defoliation occurred on the two southern Ranger Districts, Lakewood and Laona (Figure 1). An area of jack pine mortality was mapped in the southeast corner of the Lakewood Ranger District. Other damage detected included jack pine defoliation and hardwood mortality (Table 2).

Table 1.--Acreage estimates of spruce budworm defoliation on the Nicolet National Forest 1980 and 1981.

Spruce budworm defoliation	1980	1981	Net increase or decrease (percent)
Light	6,324	8,961	+29
Moderate	18,090	256	-99
Heavy	114,187	-0-	-100
Total	138,601	9,217	-93

Table 2.--Acreage estimates of jack pine defoliation and mortality and hardwood discoloration and/or mortality.

	Federal	Private	Total Acres
Hardwood Mortality	3,045	256	3,301
Jack Pine Mortality	999	-0-	999
Jack Pine Defoliation	563	26	589
Water Mortality	179	26	205

* Land ownership classifications are based on the National Forest map color code (green/Federal, white/private) for Table 2.

DISCUSSION AND RECOMMENDATIONS

Spruce budworm defoliation declined significantly over defoliation observed in 1980. Defoliated acreage decreased by 93 percent over 1980 acreage figures and no areas of heavy defoliation were found. Hardwood mortality was predominately discolored and/or dead elm stands located throughout the Forest. Some scattered maple mortality was spotted on the Florence Ranger District.

An area of jack pine mortality was found in the southeast corner of the Lakewood Ranger District. This occurred both as single tree and pocket mortality located within stands of healthy jack pine. The jack pine defoliation spotted appeared to be very light and scattered. Areas of jack pine and hardwood mortality should be field checked to determine the feasibility of salvage cuts. An aerial survey in July of 1982 is recommended to confirm the suspected collapse of spruce budworm populations.

LITERATURE CITED

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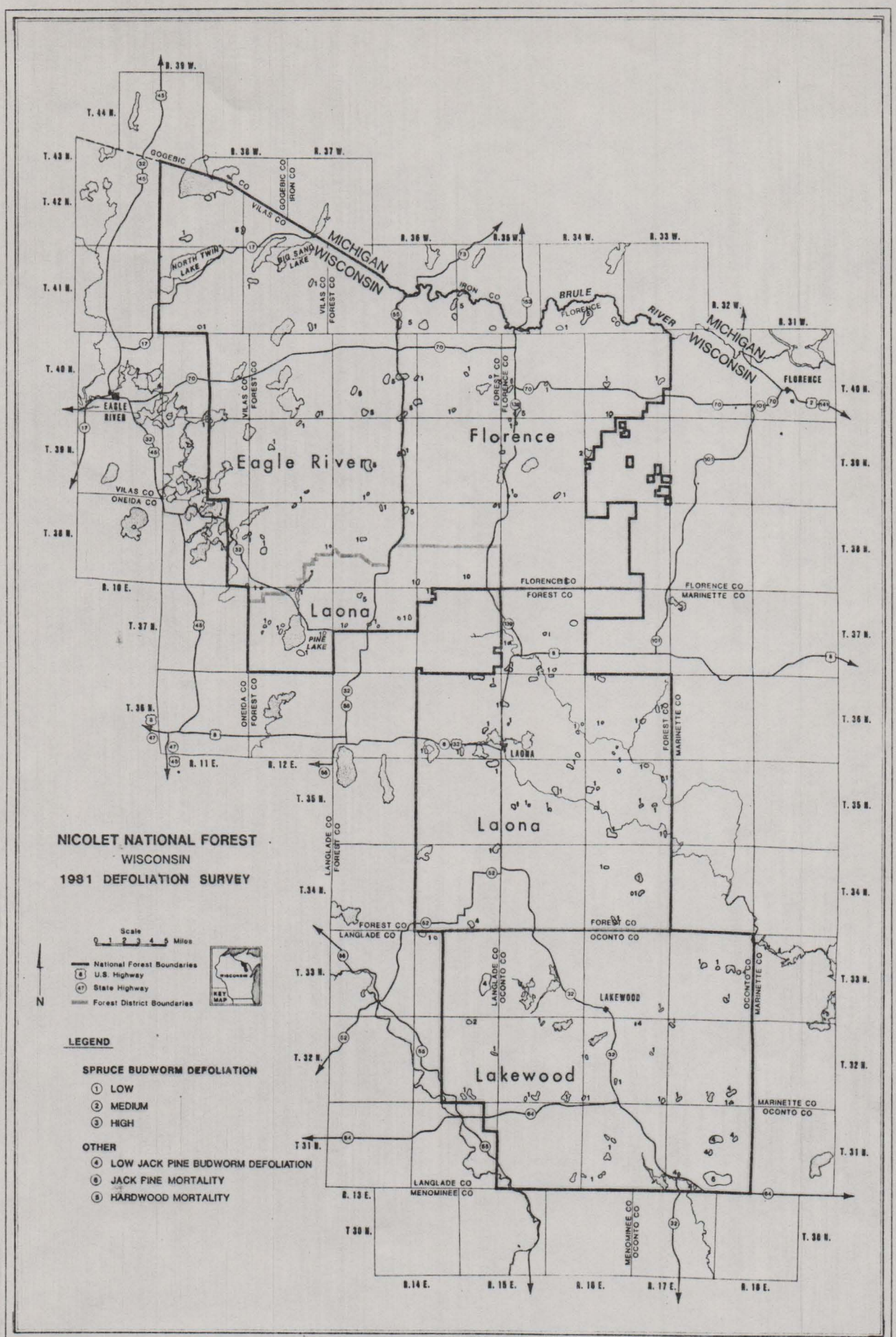
NICOLET NATIONAL FOREST
WISCONSIN
1981 DEFOLIATION SURVEY
Scale
0 1 2 3 4 5 Miles
National Forest Boundaries
U.S. Highway
State Highway
Forest District Boundaries
KEY MAP
N
LEGEND
SPRUCE BUDWORM DEFOLIATION
1 LOW
2 MEDIUM
3 HIGH
OTHER
4 LOW JACK PINE BUDWORM DEFOLIATION
5 JACK PINE MORTALITY
6 HARDWOOD MortALITY
Florence
Eagle River
Laona
Laona
Lakewood
Lakewood
MICHIGAN
WISCONSIN
MICHIGAN
WISCONSIN
GOGEBIC CO
VILAS CO
IRON CO
FLORENCE CO
FOREST CO
ONEIDA CO
MARINETTE CO
LANGLADE CO
OCONTO CO
MENOMINEE CO
BRULE RIVER
NORTH TWIN LAKE
BIG SAND LAKE
PINE LAKE
EAGLE RIVER
FLORENCE
LAONA
LAKEWOOD
R. 39 W.
R. 38 W.
R. 37 W.
R. 36 W.
R. 35 W.
R. 34 W.
R. 33 W.
R. 32 W.
R. 31 W.
R. 10 E.
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